

REMARKS

The Applicants thank the Examiner for the thorough consideration given the present application. Claims 1-2 are pending. Claims 3 and 4 are canceled herein without prejudice to or disclaimer of the subject matter set forth therein. Claim 1 is independent and is amended. The Examiner is respectfully requested to reconsider the rejections in view of the amendments and remarks set forth herein.

Claim for Priority

The Examiner has acknowledged the Applicants' claim for foreign priority based on Japanese Patent Application No. 2002-375698.

Drawings

Applicants thank the Examiner for accepting the drawings.

Information Disclosure Citation

Applicants thank the Examiner for considering the reference supplied with the Information Disclosure Statement filed April 21, 2004, and for providing Applicants with an initialed copy of the PTO-1449 form filed therewith.

Objection to the Abstract

The Abstract of the Disclosure has been revised to correct the informality noted by the Examiner.

Claim Objections

The Examiner has objected to claim 1 because of a misspelling. In order to overcome this objection, Applicants have amended claim 1 in order to correct the misspelling pointed out by the Examiner. Reconsideration and withdrawal of this objection are respectfully requested.

Rejection Under 35 U.S.C. § 112, second paragraph

Claim 1 stands rejected under 35 U.S.C. § 112, second paragraph. This rejection is respectfully traversed.

The Examiner has set forth certain instances wherein the claim language is not clearly understood.

In order to overcome this rejection, Applicants have amended claim 1 to correct the issues pointed out by the Examiner. Applicants respectfully submit that the claims, as amended, particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

Rejections Under 35 U.S.C. §103(a)

Claim 1-4 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Utsumi (U.S. 6,661,150 B2) in view of Morita (U.S. 5,668,427).

These rejections are respectfully traversed.

Amendments to Independent Claim 1

While not conceding the appropriateness of the Examiner's rejection, but merely to advance prosecution of the instant application, independent claim 1 is amended herein to recite a combination of elements directed to a stator including a base plate, a circuit board provided on the base plate, and a ring-shaped stator core piled on the circuit board, stator magnetic poles extending radially outwardly from the stator core, and coils respectively formed on the stator magnetic poles,

an outer rotor being rotatably provided on the base plate and having rotor magnets, which face the stator magnetic poles,

wherein the base plate has a plurality of through-holes for ventilation, the through-holes being arranged in a circumferential direction with regular separation,

the stator core including a plurality of piled first core plates and at least one second core plate,

the piled first core plates including a plurality of first extended pole sections,

the second core plate being provided between the piled first core plates and the base plate, and

the second core plate including a plurality of second extended pole sections, the second extended pole sections corresponding respectively to the through-holes,

wherein the plurality of the second extended pole sections is less than the plurality of the first extended pole sections.

As the Examiner will note, the subject matter of claim 3 has been incorporated into claim 1. Claims 3 and 4 are now canceled.

Examples of the differences between the cited references and the present invention follow:

Utsumi (U.S. 6,661,150 B2)

Utsumi merely discloses that the number of teeth 18 of a main core (17-1, 2 and 3) is equal to that of a sub-core (17-4 and 5). Coils are respectively formed on the teeth 18, and the sub-core and the coils are accommodated in notch sections of a base. Namely, an end face of the main core and an upper face of the sub-core are used as a magnetic flux acting surface so as to expand a magnetic path. By forming the magnetic flux acting surface into an L-shape, the magnetic flux acting surface can be broadened with an increasing number of layers of the stator core.

Since the coils disclosed by Utsumi are formed on the teeth of the main core and the sub-core, the notch sections of the base must be corresponded to all of the teeth. Therefore, strength of the base must be lowered with increasing number of the teeth.

Morita (U.S. 5,668,427)

Morita merely discloses coil forming parts (teeth) of a stator core, which is formed by alternately piling first cores and second cores, which are squeezed so as to make them thin. Therefore, winding numbers of coils can be increased, and magnetic characteristics can be improved.

The number of the teeth of the main core is not equal to that of the sub-core before squeezing. However, each of the teeth (the coil forming parts) is integrated, and has a predetermined thickness by squeezing, so that the number of the teeth of the main core becomes equal to that of the sub-core. Further, unlike the present invention, no through-holes are formed in a base.

Horng et al. (U.S. 6,384,505 B1)

While this document was not combined with Utsumi and Morita to reject the claims, the Applicants respectfully submit that Horng et al. fail to make up for the deficiencies of Utsumi and Morita.

Horng et al. merely disclose an auxiliary plate integrated with a main core of a stator core so as to remove rotational dead points and reduce weight of a stator. Coils are formed on the main core only.

The auxiliary core, as disclosed by Horng et al., does not work to increase magnetic fluxes, which interlink the coils formed on the teeth of the main core.

Note also that, the base having through-holes is not disclosed or suggested anywhere in the Horng et al. document.

The Present Invention

In the present invention, the second core plate is provided between the piled first core plates and the base plate, and the second core plate has a plurality of the second extended

pole sections, which respectively correspond to the through-holes, and whose number is less than that of the first extended pole sections.

By the above described features, increases of diameters of the coils formed on the stator magnetic poles (i.e. increases of thickness of the coils) can be absorbed by the through-holes. Therefore, thickness of the motor can be thinner, and the stator magnetic poles can be thicker without an interference of the coils and the base plate so that torque characteristics of the motor can be improved. This unique effect is not disclosed and suggested in the cited references, including Utsumi and Morita.

At least for the reasons described above, the Applicants respectfully submit that the combination of elements as set forth in independent claim 1 is not disclosed or made obvious by the prior art of record, including Utsumi and Morita.

Therefore, independent claim 1 is in condition for allowance.

Dependent claim 2 is also in condition for allowance due to its dependency from allowable independent claim 1, or due to the additional novel features set forth therein.

Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. §103(a) are respectfully requested.

CONCLUSION

Since the remaining patents cited by the Examiner have not been utilized to reject claims, but merely to show the state of the art, no comment need be made with respect thereto.

Application No. 10/743,912
Amendment dated February 28, 2005
Reply to Office Action of November 29, 2004

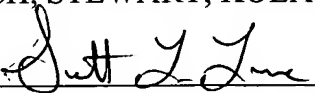
Docket No. 0038-0422P
Art Unit: 2834
Page 11 of 12

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. It is believed that a full and complete response has been made to the outstanding Office Action, and that the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, he is invited to telephone Carl T. Thomsen (Reg. No. 50,786) at (703) 205-8000.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17, particularly extension of time fees.

Respectfully submitted,
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Attachment: Revised Abstract of the Disclosure